UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

May 23, 2018

**MEMORANDUM**

**SUBJECT:** National Remedy Review Board Recommendations for the American Cyanamid Superfund Site

**FROM:** Douglas Ammon, Chair
National Remedy Review Board

**TO:** John Prince, Acting Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency Region 2

## Purpose

The National Remedy Review Board (the Board) has completed its review of the proposed cleanup action for the American Cyanamid Superfund site, in Bridgewater, New Jersey. This memorandum documents the Board's advisory recommendations.

## Context for Board Review

The Administrator established the Board as one of the October 1995 Superfund Administrative Reforms to help control response costs and promote consistent and cost-effective remedy decisions. The Board furthers these goals by providing a cross-regional, management-level, "real time" review of high cost proposed response actions prior to their being issued for public comment. The Board reviews all proposed cleanup actions that exceed its cost-based review criteria.

The Board review is intended to help control remedy costs and to promote both consistent and cost-effective decisions. Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), in addition to being protective, all remedies are to be cost-effective. The Board considers the nature of the site; risks posed by the site; regional, state, tribal, Community Advisory Group (CAG) and potentially responsible party (PRP) opinions on proposed actions; the quality and reasonableness of the cost estimates; and any other relevant factors or program guidance in making our advisory recommendations. The overall goal of the review is to ensure sound decision making consistent with current law, regulations, and guidance.

Generally, the Board makes the advisory recommendations to the appropriate regional division director. Then, the region will include these recommendations in the administrative record for the site, typically before it issues the proposed cleanup plan for public comment. While the Board's recommendations are expected to carry substantial weight, other important factors, such as subsequent public comment or technical analyses of response options, may influence the Agency's final remedy decision.

The Board expects the regional division director to respond in writing to its recommendations within a reasonable period of time, noting in particular how the recommendations influenced the proposed cleanup decision, including any effect on the estimated cost of the action. Although the Board's recommendations are to be given substantial weight, the Board does not change the Agency's current delegations or alter the public's role in site decisions.

**Overview of the Proposed Action**

American Cyanamid operated a facility in Bridgewater Township, New Jersey, from 1915 to 1999, manufacturing a range of products including rubber-based chemicals, dyes, pigments, chemical intermediates, petroleum-based products, and pharmaceuticals. Previous investigations identified that several surface impoundments, or constructed waste lagoons, surrounding soils and the groundwater aquifers below the site have been contaminated with waste chemicals from previous manufacturing processes. The facility also produced benzene, toluene, naphthalene and xylene from coal light-oil refining. The residual byproduct of refining coal light oil was acid tar. The byproducts were managed and stored onsite through the use of Impoundments 1 and 2 (referred to as Operable Unit 8 (OU8)). The focus of the Board's current review is OU8, which addresses site contamination within Impoundments 1 and 2.

Impoundments 1 and 2 are the only impoundments remaining on the Site that have not yet been addressed under CERCLA. The impoundments have been found to be contaminated with acid tars made up of mainly volatile organic compounds (VOCs), primarily benzene, toluene, and xylene, and semi-volatile organic compounds (SVOCs), mainly naphthalene. Benzene concentrations are found near 60,000 parts per million (ppm), or 6 percent by mass. Additionally, the material in these two impoundments are very acidic, with average pHs of 1.5 standard units (SU) and as low as 0.56 SU, and physically exhibit a solid to semi-solid consistency. The less than ideal location of the impoundments, in close proximity to the Raritan River, along with the acidity and complex nature of the materials, make addressing these impoundments technically challenging.

This is the final OU for the site. The Region presented an earlier phase, the OU4 overall site remedy, with the exception of impoundments 1 and 2 (OU8), for the American Cyanamid site to the Board in 2010. The OU4 remedy is now in remedial design. The Region's preferred alternative for OU8 includes an action to address all principal threat wastes within both Impoundments 1 and 2 and any contamination found within the berms and beneath the impoundments down to the existing groundwater table. The primary contaminants of concern within OU8 are benzene, toluene and naphthalene. The Region presented to the Board the following components for the proposed OU8 remedy:

- Excavation and dewatering of principal threat waste material
- Emission and odor control
- Offsite shipment and beneficial reuse offsite with a preference to use a cement kiln
- Treatment of any remaining residual materials co-mingled with principal threat wastes via In-Situ Stabilization and Solidification
- Backfill with remaining berm materials
- Installation of a protective cover

This action would remove approximately 44,700 tons of principal threat waste and permanently destroy it offsite and capture 9,600 tons (2.3 million gallons) of aqueous phase contaminated liquid for treatment. The remedy could be implemented over a 38-month timeframe.

**National Remedy Review Board Advisory Recommendations**

The Board reviewed the information package describing this proposal and discussed related issues with Region 2 management and staff (Amelia Wagner, Stephanie Vaughn, Mark Schmidt, Mark Austin) on October 26, 2017. Based on this review and discussion the Board offers the following comments:

**Alternative Remedy**

In the information provided to the Board, the Region described a number of alternatives. The Board notes that it may be possible to combine certain elements of alternatives 5 and 6. This could provide flexibility by allowing consolidation of contaminated soils from the berms and soils underlying the impoundments in the on-site Corrective Action Management Unit (CAMU), if such soils meet (or can be treated to meet) CAMU acceptance criteria. This approach may be more cost effective than stabilization and capping in place within OU8, and might be advantageous in other ways (e.g., less residual waste in the floodplain, reduction in Operation and Maintenance (O&M) requirements, increased assurance that all residual contamination is treated and placed in a lined disposal unit). The Board recommends that the Region consider evaluating another alternative combining these two alternatives.

Based on the information provided to the Board, the Region's preferred approach would include the use of an off-site cement kiln. The Board recommends that the region should consider providing flexibility in the decision documents in designating off-site facilities to allow treatment at any facility permitted to accept the waste (and in compliance with the off-site rule) including, but not limited to, cement kiln facilities.

**Remedy Performance**

Based on the information provided by the Region, this site involves multiple operable units. One of them, OU4, addresses site-wide soil and involves consolidation and in-situ stabilization/solidification, engineered caps or covers and groundwater collection and treatment. The Board recommends that the decision documents clarify how the actions in OU8 would be consistent with and integrate with the ongoing actions in OU4, including remedial action objectives (RAOs) and physical delineations.

Additionally, the Region should consider if the remedy for OU8 will preclude the implementation of future actions that may be needed to achieve the RAOs for OU4.

The Board also recommends that the Region explain in its decision documents for this OU that any groundwater and soil contamination issues associated with these two impoundments are being addressed as part of the site-wide remedial action selected in the OU4 Record of Decision (ROD), and therefore, would not be addressed as part of the OU8 remedial action.

In the package provided by the Region, one of the RAOs for OU8 is to prevent or minimize groundwater impacts from contaminants of concern (COCs) contained within the impoundments. This RAO appears to be supported by remediation goals (RGs) that are adapted from the OU4 soil remedy and presented in the package. These site specific RGs for OU8 are as much as six orders of magnitude above the generic soil screening levels for protection of groundwater. The Board recommends that the Region clearly explain in its decision documents how the methodology for establishing RGs for OU8 is up-to-date for determining that residual materials are consistent with the OU4 groundwater remedial action objectives.

**Applicable or Relevant and Appropriate Regulations (ARARs)**

In the information provided to the Board, the Region mentioned permitting for certain actions associated with cleanup at this site. The Board notes that consistent with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 121(e)(1), no federal, state or local permits are necessary for on-site remedial actions. The Board recommends that the Region explain in its decision documents how the preferred approach would meet the specific substantive requirements in the ARARs associated with this cleanup that would otherwise be addressed through federal or state permits.

**Remedial Action Objectives**

The RAOs presented to Board included two groundwater-related RAOs that were unclear and very similar. These RAOs are “Prevent or minimize current or future migration of contaminants of concern (COCs) from Impoundments 1 and 2” and “Prevent or minimize groundwater impacts from COCs contained within the impoundments.” The Board recommends that the RAOs be revised to more clearly state the objectives of this OU as distinct from but consistent with the other site OUs (e.g., OU4). In particular, the Board recommends that the Region consider merging these two RAOs and modifying them to clarify that the objective of this OU is to address sources of contamination to groundwater, not to address contaminants in groundwater.

In addition, the presentation to the Board indicated that there were no risks to ecological receptors yet the RAOs include reducing exposure to ecological receptors. The Board recommends that the Region’s decision documents ensure that the risk assessment summary is consistent with the RAOs.

**Principal Threat Waste**

The information provided to Board states that all Principal Threat Waste (PTW) in impoundments 1 and 2 will be addressed by any of the proposed alternatives, however, it is unclear if PTW material may remain in the residual materials and soil berms. The Board recommends that the decision documents clarify if PTW is present in the residual materials and soil berms, consistent with CERCLA, the NCP, and EPA guidance and policy. If the residual materials and soil berms contain PTW, the Board recommends the region clarify how the approach being taken for these materials is consistent with CERCLA § 121(b)(l)'s preference for treatment "to the maximum extent practicable; "40 CFR § 300.430(a)(l)(iii)(A)'s expectation that "treatment [be used] to address the principal threats posed by a site, wherever practicable;" and 40 CFR § 300.430(f)(l)(ii)(E)'s preference for treatment "to the maximum extent practicable," while protecting human health and the environment, attaining ARARs identified in the ROD, and providing "the best balance of trade-offs" among the NCP's five balancing criteria.

**Human Health Risk**

In the package presented to the Board, Tables 1a and 1b indicate that the streamlined risk assessment identified cancer risk from exposure to the impoundment materials at levels greater than $10^{-2}$. The Board recommends that the region confirm that the Agency's recommended model for high carcinogenic risks was used to develop these risk estimates. This model is recommended in Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final (EPA/540.1-89/002) (December 1989). Additionally, the Board recommends the region explain the modeling and risk assessment conclusions in the decision documents so the public can better understand site risks and be afforded a meaningful opportunity to provide comment.

**Conclusion**

We commend the Region's collaborative efforts in working with the Board and stakeholder groups at this site. We request that a draft response to these recommendations be included with the draft proposed plan when it is forwarded to the Office of Superfund Remediation and Technology Innovation's Site Assessment and Remedy Decisions (SARD) branch for review. The SARD branch will work with both your staff and the Board to resolve any remaining issues prior to the release of the record of decision. This memo will be posted to the Board's website (https://www.epa.gov/superfund/national-remedy-review-board-nrrb) 30 calendar days of my signature. Once your response is final and made part of the site's administrative record your response will also be posted on the Board's website.

Thank you for your support and the support of your managers and staff in preparing for this review. Please call Doug Ammon at (703) 347-8925 should you have any questions.

cc: J. Woolford (OSRTI)
D. Stalcup (OSRTI)
C. Mackey (OSRE)

P. Leonard (FFRRO)
J. Hovis (OSRTI)
NRRB Members